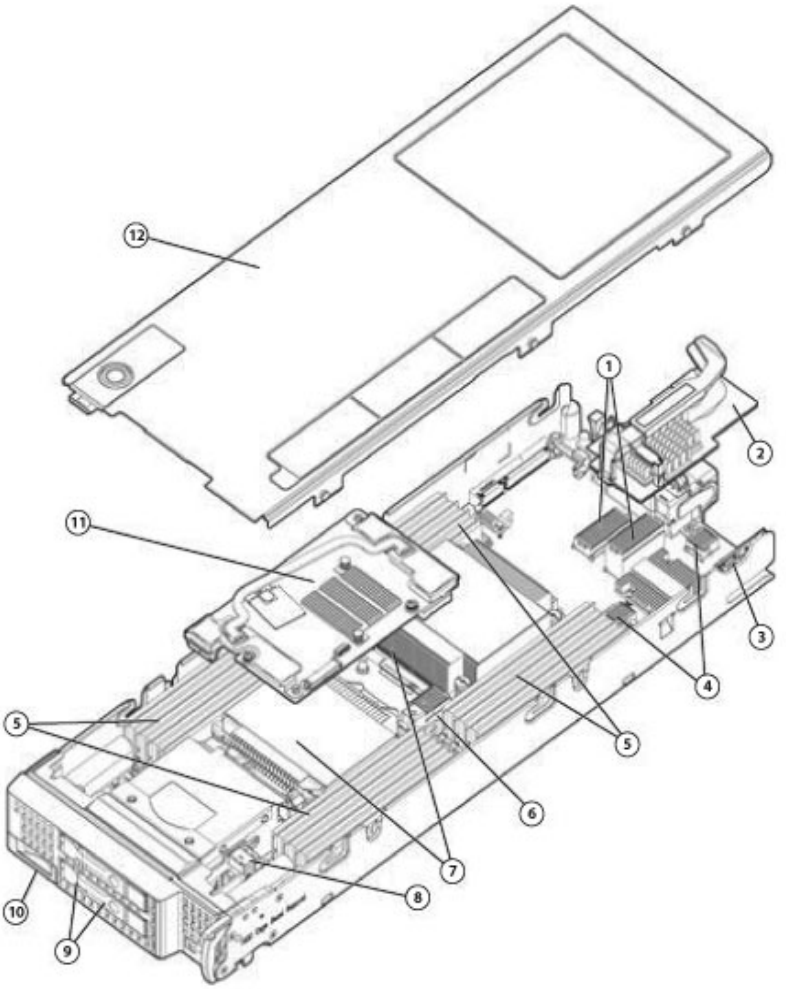

HP ProLiant BL460c Generation 8 (Gen8) Server Blade

1. Two (2) PCIe 3.0 mezzanine I/O expansion slots
2. FlexibleLOM adapter
3. MicroSDHC card connector
4. FlexibleLOM connectors
5. Sixteen (16) DDR3 DIMM memory slots (8 per processor)
6. HP Smart Array P220i Controller connector
7. Up to two (2) Intel® Xeon® E5-2600 family processors
8. Internal USB 2.0 and Trusted Platform Module (TPM) connectors
9. Two (2) small form factor (SFF) hot-plug drive bays
10. HP c-Class Blade SUV (Serial, USB, VGA) connector
11. HP Smart Array P220i Controller with 512MB FBWC
12. Access panel

Standard Features

NOTE: This document covers the HP ProLiant BL460c Gen8 server blade only. For information on HP BladeSystems c-Class Enclosures and HP BladeSystem c-Class Interconnect and Mezzanine Components, please see the following:

HP BladeSystem c-Class Enclosures QuickSpecs:

- HP BladeSystem c3000 Enclosure QuickSpecs at http://h18000.www1.hp.com/products/quickspecs/12790_na/12790_na.html
- HP BladeSystem c7000 Enclosure QuickSpecs at http://h18000.www1.hp.com/products/quickspecs/12810_na/12810_na.html
- HP BladeSystem c-Class Interconnect and Mezzanine Components at http://h18004.www1.hp.com/products/blades/components/c-class-interconnects.html http://h18004.www1.hp.com/products/blades/components/c-class-adapters.html

NOTE: For proper BladeSystem operation, the minimum required versions of HP Onboard Administrator and HP Virtual Connect are required and available via the HP Service Pack for ProLiant, please see http://www.hp.com/go/spp/download.

NOTE: For the Standard Features shipped in the "Factory Integrated Models", please see the "Configuration Information - Factory Integrated Models" section.

Processor One of the following depending on Model	Eight-Core Processors Intel® Xeon® E5-2680 (2.70GHz/8-core/20MB/130W) Processor Intel® Xeon® E5-2670 (2.60GHz/8-core/20MB/115W) Processor Intel® Xeon® E5-2665 (2.40GHz/8-core/20MB/115W) Processor Intel® Xeon® E5-2660 (2.20GHz/8-core/20MB/95W) Processor Intel® Xeon® E5-2650 (2.0GHz/8-core/20MB/95W) Processor Intel® Xeon® E5-2650L (1.80GHz/8-core/20MB/70W) Processor Six-Core Processors Intel® Xeon® E5-2667 (2.90GHz/6-core/15MB/130W) Processor Intel® Xeon® E5-2640 (2.50GHz/6-core/15MB/95W) Processor Intel® Xeon® E5-2630 (2.30GHz/6-core/15MB/95W) Processor Intel® Xeon® E5-2630L (2.0GHz/6-core/15MB/60W) Processor Intel® Xeon® E5-2620 (2.0GHz/6-core/15MB/95W) Processor Quad-Core Processors Intel® Xeon® E5-2609 (2.40GHz/4-core/10MB/80W) Processor Intel® Xeon® E5-2603 (1.80GHz/4-core/10MB/80W) Processor Dual-Core Processors Intel® Xeon® E5-2637 (3.0GHz/2-core/5MB/80W) Processor

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Standard Features

Cache Memory One of the following depending on Model	20MB (1x20MB) L3 cache NOTE: For Eight-core processors. 15MB (1x15MB) L3 cache NOTE: For Six-core processors. 10MB (1x10MB) L3 cache NOTE: For Quad-core processors. 5MB (1x5MB) Level 3 cache NOTE: For Dual-core processors.	
Chipset	Intel® C600 Series Chipset Intel® E5-2600 Processor Family NOTE: For more information regarding Intel chipsets, please see the following: http://www.intel.com/products/server/chipsets/.	
Upgradeability	Upgradeable to two (2) processors	
On System Management Processor	HP iLO (Firmware: HP iLO 4) NOTE: For more information, visit: http://www.hp.com/go/ilo	
Memory Protection	Advanced ECC Online spare mode Lockstep mode	
Memory One of the following depending on Model	Type	HP SmartMemory DDR3 Load Reduced (LRDIMM), Registered (RDIMM), or Unbuffered ECC (UDIMM)
	Standard (Pre-configured Models)	64GB (8 x 8GB) DDR3 1600MHz RDIMMs at 1.5V 32GB (4 x 8GB) DDR3 1600MHz RDIMMs at 1.5V 32GB (4 x 8GB) DDR3 1333MHz RDIMMs at 1.35V 16GB (4 x 4GB) DDR3 1333MHz RDIMMs at 1.35V
	Maximum (LRDIMM)	512GB (16 x 32GB) up to 1333MHz at 1.35V
	Maximum (RDIMM)	256GB (16 x 16GB) up to 1600MHz at 1.5V 256GB (16 x 16GB) up to 1333MHz at 1.35V
	Maximum (UDIMM)	128GB (16 x 8GB) up to 1333MHz at 1.35V
	NOTE: HP memory from previous generation servers are not qualified or warranted with this server. HP SmartMemory is required to realize the memory performance improvements and enhanced functionality listed in this document for Gen8. For additional information, please see the HP SmartMemory QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/14225_na/14225_na.html NOTE: LRDIMM, RDIMM and UDIMMs are all distinct memory technologies and cannot be mixed within a server. The majority of ProLiant Gen8 servers support RDIMM, UDIMM and LRDIMM.	

Standard Features

Network Controller

One (1) HP FlexFabric 10Gb 2-port 554FLB FlexibleLOM
NOTE: Supports FCoE, Flex-10, TCP/IP offload engine, hardware-based accelerated iSCSI, iSCSI boot, and autosensing 10Gb/1Gb Ethernet.
NOTE: Each port is autosensing 1Gb/10Gb, and can interoperate with 1Gb HP BladeSystem c-Class interconnect components. Both ports will operate at the same speed.
NOTE: FlexFabric capabilities require the use of an HP Virtual Connect FlexFabric module. Fibre Channel over Ethernet (FCoE) is supported with the HP 10GbE Pass-Thru Module, HP 6120XG Blade Switch with the CEE license installed, HP Cisco B22HP Fabric Extender and HP Cisco B22HP Fabric Extender with 16 FET for BladeSystem c-Class. Learn more at:
http://www.hp.com/go/bladesystem/interconnects

Expansion Slots

Two (2) I/O expansion mezzanine slots:

- x16 PCIe 3.0 Type A (supports Type A mezzanine cards) (expansion slot 1).
  NOTE: This expansion slot supports dual-port mezzanine cards: one port is routed to interconnect module bay 3 and the other to bay 4.
- x16 PCIe 3.0 Type B (supports Type A and Type B mezzanine cards (expansion slot 2).
  NOTE: This expansion slot supports dual-port and quad-port mezzanine cards. For dual-port cards, one port is routed to interconnect module bay 5 and the other to bay 6. For quad-port cards, one port is routed to interconnect module bay 5, one to bay 6, one to bay 7, and one to bay 8.
  NOTE: A second processor must be installed (in processor slot 2) to have access to the second expansion slot (expansion slot 2).

Mezzanine card options include:

- Dual-port 10Gb FlexFabric and10Gb Flex-10 for additional network ports.
- Dual-port 8Gb Fibre Channel HBA for SAN connectivity.
- QDR and FDR InfiniBand for low latency and high bandwidth server interconnectivity.

HP Server ROM

HP ROM (read only memory) is now digitally signed using HP's Corporate Signing Service. This signature is verified before the flash process starts, reducing accidental programming and preventing malicious efforts to corrupt system ROM.

HP ROM provides for essential initialization and validation of hardware components before control is passed to the customer-installed operating system. The ROM also provides the capability of booting from various fixed media (HDD, CD-ROM) and removable media (USB), to continue operation to the operating system.

HP ROM performs very early configuration of the video controller, to allow monitoring of initialization progress via an attached monitor. If configuration or hardware errors are discovered during this early phase of hardware initialization, suitable messages are now displayed on the connected monitor. Additionally, these configuration or hardware errors are logged to the Integrated Management Log (IML) to assist in diagnosis.

HP's ProLiant ROM is used to configure the following:

- Processor and chipset status registers
- System memory, memory map, and memory initialization
- System hardware configuration (integrated PCI devices and optional PCIe cards).
- Customer-specific BIOS configuration using the HP ROM-Based Setup Utility (RBSU).

Standard Features

NOTE: For further information, please refer to HP's RBSU (ROM based setup utility) user guide: www.hp.com/support/rbsu

Storage Controller	All Models	One (1) HP Smart Array P220i Controller with 512MB Flash-Backed Write Cache (FBWC) supporting RAID 0 and RAID 1. NOTE: Upgradeable firmware with recovery ROM. NOTE: The HP Smart Array P220i supports two (2) small form factor (SFF) hot plug drive bays. NOTE: The server supports up to a combined total of two (2) FBWC supercap options. Available Options: Smart Array Advanced Pack Software for enhanced performance, reliability, availability, and security of system data

Maximum Internal Storage	Hot Plug SFF SAS	2.0TB	2 x 1.0TB
	Hot Plug SFF SATA	2.0TB	2 x 1.0TB
	Hot Plug SFF SAS SSD	1.6TB	2 x 800GB

NOTE: The ProLiant BL460c Gen8 server includes the new HP hot plug small form factor (SFF) SmartDrive carrier for enhanced management and reduced maintenance errors. HP drives from previous generation servers are not compatible with the ProLiant BL460c Gen8 drive bays.

Interfaces	Micro SDHC Slot	One (1) internal Micro Secure Digital High Capacity (Micro SDHC) card slot
	USB 2.0 Port	One (1) internal USB 2.0 connector for USB flash media drive keys

NOTE: The above options are for integrated hypervisor virtualization environments needing a low cost boot solution with the highest performance and reliability.

Industry Standard Compliance

ACPI 2.0
Microsoft® Logo certifications
USB 2.0 Support
IMPI 2.0
Secure Digital 2.0
TMP 1.2 Support
IEEE (specific IEEE standards depending on Ethernet adapter card(s) installed)
Advanced Encryption Standard (AES)
Triple Data Encryption Standard (3DES)
SNMP
SSL 2.0
DMTF Systems Management Architecture for Server Hardware Command Line Protocol (SMASH CLP)
Active Directory v1.0
PCIe 3.0

Standard Features

Operating Systems and Virtualization Software Support for ProLiant Servers

Microsoft Windows Server
Red Hat Enterprise Linux (RHEL)
SUSE Linux Enterprise Server (SLES)
Oracle Solaris
VMware
Citrix XenServer

NOTE: For more information on HP's Certified and Supported ProLiant Servers for OS and Virtualization Software and latest listing of software drivers available for your server, please visit our Support Matrix at: http://www.hp.com/go/ossupport

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Enclosures

HP offers two different c-Class server blade enclosures to meet your individual needs:

- The HP BladeSystem c7000 rack enclosure is 10U high and holds up to sixteen (16) ProLiant BL460c Gen8 servers plugged vertically.
- The HP BladeSystem c3000 rack enclosure is 6U high and holds up to eight (8) HP ProLiant BL460c Gen8 servers plugged horizontally.
- Server blades, storage blades, interconnect modules, power supplies, fans, and redundant Onboard Administrator modules are all designed to fit into the c3000 and c7000 enclosures.

NOTE: For additional enclosure information, please see:
http://h18004.www1.hp.com/products/blades/components/enclosures/c-class/index.html

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Graphics

Integrated Matrox G200 video standard

- 1280 x 1024 (32 bpp)
- 1920 x 1200 (16 bpp)

Form Factor

HP ProLiant BL460c Gen8 is a half-height server blade that plugs into the HP BladeSystem c3000 and c7000 enclosures.

On System Management

HP iLO Management Engine

HP iLO Management Engine is a complete set of embedded management features supporting the complete lifecycle of the server, from initial deployment, through ongoing management, to service alerting and remote support. HP iLO Management Engine comes standard on all HP ProLiant Gen8 servers. The HP iLO Management Engine portfolio includes:

- HP iLO: The HP iLO management processor is the core foundation for HP iLO Management Engine. HP iLO for HP ProLiant servers simplify server setup, engage health monitoring and power and thermal control, and promote remote administration for HP ProLiant ML, DL, BL and SL servers. Furthermore with the new HP iLO is the ability to access, deploy, and manage your server anytime from anywhere with your Smartphone device.
- HP Agentless Management: With HP iLO Management Engine in every HP ProLiant Gen8 server, the base hardware monitoring and alerting capability is built into the system (running on the HP iLO chipset) and starts working the moment that a power cord and an Ethernet cable is connected to the server.

- **HP Active Health System:** HP Active Health System is an essential component of the HP iLO Management Engine. The HP Active Health System monitors and records changes in the server hardware and system configuration. The Active Health System assists in diagnosing problems and delivering rapid resolution when system failures occur.
- **HP Intelligent Provisioning (previously known as SmartStart):** HP Intelligent Provisioning offers the ability for out-of-the box single-server deployment and configuration without the need for media.

NOTE: For more information, visit http://www.hp.com/go/ilo

HP Insight management software	HP Service Pack for ProLiant (SSP)	HP Service Pack for ProLiant (SPP) and HP Smart Update Manager (HP SUM) version 5 provide a new, comprehensive approach to firmware and system software maintenance. Together they provide better operating stability and ensure maximum uptime. The SPP will be updated at a predictable cadence, typically coinciding with new HP server hardware launches. By enabling all firmware to be updated online and integrating firmware and system software updates in one operation HP SUM and the SPP offer faster updates of individual servers and dramatically faster updates of entire BladeSystem enclosures. Further improving system uptime and stability is the fact that HP provides 12 months of support on each Service Pack for ProLiant. The user experience around HP SUM and the SPP has been improved in several ways, starting with the web download. A single web page provides access to a single download containing both the latest version of HP SUM version 5 and the latest SPP. Optional smaller subsets with only specific types of servers or specific operating systems are offered to save on download time. The HP SUM application has been re-written to provide a more straightforward, intuitive user interface that guides the user through the steps of discovery, analyses and update, providing comprehensive information on available updates, criticality and interdependencies. This information is also available in reports. By providing the option of multiple local or shared repositories which can be easily updated from hp.com, HP SUM provides the tools to optimize stability and consistency throughout the company. While HP SUM and the SPP will recommend the combinations of firmware and system software that HP has found to be the best practice, the application gives customers the flexibility to set their own specific baseline. The Service Pack for ProLiant has been rigorously tested with specific attention for interaction between firmware, drivers and agents both within the server as well as in interaction with the BladeSystem enclosure components (Onboard Administrator and Virtual Connect). This testing ensures the highest quality as well as providing the input for HP SUM to deploy updates taking into account all interdependencies, when determining the correct updates and order of update deployment. The Service Pack for ProLiant (which includes HP SUM 5) can be downloaded from www.hp.com/go/spp/download. More information can be found: www.hp.com/go/spp and http://www.hp.com/go/hpsum

Standard Features

Security

- Power-on password
- Administrator's password
- Keyboard password (QuickLock)
- HP iLO 4 On System Management Chipset with:
  - SSL encryption
  - Secure Shell version 2
  - Advanced Encryption Standard (AES) and Triple Data Encryption Standard (3DES) on browser, CLP and XML scripting interface
  - AES and RC4 encryption of video
- External USB port enable/disable
- Network server mode
- Serial interface control
- TPM (Trusted Platform Module) 1.2 option
- Advanced Encryption Standard (AES)
- Intel® Advanced Encryption Standard-New Instructions (AES-NI)

Availability

Memory

- Advanced ECC uses single device data correction (SDDC) to detect and correct single and all multi-bit error that occurs within a single DRAM chip. Both x4 and x8 SDDC are supported (x8 requires lockstep mode).
- Memory online spare mode (also known as rank spare mode) detects a rank that is degrading and switches operation to the spare rank.
- Memory Lockstep mode is used to correct a single x8 DRAM device failure on a DIMM. The DIMMs in each paired memory channel must have identical HP part numbers.
- Memory demand and patrol scrubbing to prevent accumulation of correctable errors and reducing the likelihood of unplanned downtime.
- Failed DIMM isolation improves the service time thus improving the overall system availability.
- Address parity protection available on RDIMMs and LRDIMMs detects address bit errors to improve service time and overall system availability.

Mezzanine options and I/O

- " FlexibleLOM (LAN on Motherboard) connector supporting two (i.e. redundant) Ethernet ports.
- Multiple mezzanine I/O expansion slots that support a wide variety of mezzanine cards each supporting multiple data paths routed to redundant interconnect modules.
- Network Adapter Teaming (bonding) provides network fault tolerance, transmit load balancing, and switch-assisted load balancing.

Storage

- Two (2) hot-plug SAS/SATA/SSD drive bays.
- Integrated HP Smart Array P220i Controller with 512MB FBWC, RAID 0 and 1 support, and upgradeable firmware with recovery ROM capability.
- Optional HP D2200sb Storage Blade for direct attachment of up to 12 drives to an adjacent blade within the c-Class enclosure.
- Optional dual-port Fibre Channel mezzanine card(s) for redundant SAN connections.

Processor/Chipset

- Processor internal sensors & thermal control protection against over-temperature conditions.
- Cache parity/ECC protects cache data from accidental data corruption.

- Machine Check Architecture (MCA) detects and captures hardware errors such as system bus, memory ECC, parity, and cache, and improves service time.
- Intel® QPI Protocol Protection allows detection of data errors using a checksum of 8-bits.
- Core Disable for FRB (fault resilient boot) allows a system to power-on despite a failing core-pair. It uses BIST (built-in self test) results to detect a failure and disables the target core-pair upon subsequent boot.

Server Blade Enclosure Infrastructure

- Pooled power for true N+N power redundancy through up to six (6) hot-plug, high-efficiency, common slot enclosure-based power supplies (configuration dependent).
- Up to ten (10) redundant enclosure-based hot-plug HP Active Cool fans that scale to meet future demands and optimize airflow, reduce power draw, and improve acoustic performance.
- Dual grid power providing redundant rack enclosure power feeds to the server blade enclosure.
- HP Dynamic Power Saver Mode the total enclosure power consumption is monitored in real time and automatically adjusted with changes in demand for improved efficiency and reliability.
- HP Dynamic Power Capping safely limits power usage without impacting performance by capping peak usage instead of average power usage, removes risk to electrical infrastructure with a fast-acting, hardware-based capping algorithm, and reclaims more power by dynamically controlling power limits based on workload demand.
- Up to eight interconnect modules per server blade enclosure providing four simultaneous redundant fabrics for FlexFabric, Virtual Connect Ethernet, Fibre Channel, InfiniBand, Pass Thru Ethernet, etc.
- Enclosure crosslinks between adjacent enclosures to provide interconnect module-to-module connections or as Virtual Connect module stacking links.
- Optional enclosure redundant Onboard Administrator system management module.

Warranty

This product is covered by a global limited warranty and supported by HP Services and a worldwide network of HP Authorized Channel Partners. Hardware diagnostic support and repair is available for three years from date of purchase. Support for software and initial setup is available for 90 days from date of purchase. Enhancements to warranty services are available through HP Care Pack services or customized service agreements. Certain restrictions and exclusions apply. Hard drives have either a one year or three year warranty; refer to specific hard drive QuickSpecs for details.
NOTE: Server warranty includes 3 year Parts, 3 year Labor, 3-year on-site support. Warranty repairs may be accomplished through the use of Customer Self Repair (CSR) parts. These parts fall into two categories: 1) Mandatory CSR parts are designed for easy replacement. A travel and labor charge will result when customers decline to replace a Mandatory CSR part; 2) Optional CSR parts are also designed for easy replacement but may involve added complexity. Customers may choose to have HP replace Optional CSR parts at no charge. Additional information regarding worldwide limited warranty and technical support is available at http://h18004.www1.hp.com/products/servers/platforms/warranty/index.html.

Optional Features

Fibre Channel Support		Up to two (2) optional Fibre Channel mezzanine HBAs are supported on the HP ProLiant BL460c Gen8.
Compatible SAN		HP ProLiant BL460c Gen8 server blades are optimized for HP MSA, EVA and XP. HP ProLiant BL460c Gen8 server blades are compatible with select 3rd party SANs. Please see blade storage page for more details at http://h18004.www1.hp.com/products/blades/components/c-class-sans.html.
HP Virtual Connect		HP Virtual Connect is an interconnect option for BladeSystem c-Class that simplifies server connectivity to data and storage networks, and reduces costs. Unique HP Flex-10 technology makes maximum use of network bandwidths, provide dynamic tuning and enable extreme flexibility to meet individual server and infrastructure requirements by allocating up to 4 network connections per server port. Virtual Connect FlexFabric modules extend those capabilities to allocate one function per port to storage connections. HP Virtual Connect Enterprise Manager (VCEM) provides server management software with a central console to administer network connections and workloads for thousands of servers. For more information on Virtual Connect Enterprise Manager, see http://www.hp.com/go/vcem. For more information on Virtual Connect Ethernet, Fibre Channel, Converged Network and management options, see http://www.hp.com/go/virtualconnect.
HP Insight management software	HP Insight Control	HP Insight Control, a product option, delivers essential infrastructure management that can help save time and money by making it easy to deploy, migrate, monitor, remote control, and optimize your IT infrastructure through a single, simple management console. Two versions of Insight Control are available, to serve environments requiring either a Linux-based or a Windows-based central management server: HP Insight Control for Linux, and HP Insight Control. For more information, see http://www.hp.com/go/insightcontrol. HP Insight Control includes one year of 24 x 7 HP Software Technical Support and Update Service ensuring rapid access to HP support staff and proactive delivery of software updates. For more information about this service, see http://www.hp.com/services/insight.
	HP Matrix Operating Environment	The HP Matrix Operating Environment (Matrix OE) for ProLiant and Integrity servers is an integrated command center that helps you instantly adjust to dynamic business demands. This advanced infrastructure management software lets you reduce the cost of common data center tasks by up to 40 percent while keeping pace with your changing business. The HP Matrix OE includes the automated provisioning, optimization, and recovery management capabilities for HP CloudSystem Matrix, the ideal platform for private cloud and Infrastructure as a Service (IaaS). For more information, see http://www.hp.com/go/matrixoe.

Optional Features

HP iLO Advanced License for ProLiant Servers

HP iLO management processors for HP ProLiant Gen8 servers virtualizes system controls to help simplify server setup, engage health monitoring and power and thermal control, and promote remote administration. HP iLO functions out-of-the-box without additional software installation and functions regardless of the servers' state of operation. The HP iLO can be accessed from any location via a web browser and works hand-in-hand with HP Systems Insight Manager, Insight Control, and Matrix Operating Environment, helping customers unleash the value of the ProLiant platform and deliver the highest possible quality of IT service to the business.

Advanced functionality, such as graphical remote console, multi-user collaboration, and video record/playback can be activated with the optional HP iLO Advanced or HP iLO Advanced for BladeSystem licenses. The Advanced licensed features offer sophisticated remote administration of servers in dynamic data center and remote locations and can help significantly reduce cost associated with IT-related travel and unplanned downtime.
NOTE: For more information, visit http://www.hp.com/go/ilo.

High Performance Clusters

HP Cluster Platforms	HP Cluster Platforms are specifically engineered, factory-integrated large-scale ProLiant clusters optimized for High Performance Computing, with a choice of servers, networks and software. Operating system options include specially priced offerings for Red Hat Enterprise Linux and SUSE Linux Enterprise Server, as well as Microsoft Windows HPC Server. A Cluster Platform Configurator simplifies ordering. http://www.hp.com/go/clusters
HP HPC Interconnects	High Performance Computing (HPC) interconnect technologies are available for this server as part of the HP Cluster Platform portfolio. These high-speed InfiniBand and Gigabit interconnects are fully supported by HP when integrated within an HP cluster. Flexible, validated solutions can be defined with the help of configuration tools. http://www.hp.com/techservers/clusters/ucp/index.html
HP Insight Cluster Management Utility	HP Insight Cluster Management Utility (CMU) is an HP-licensed and HP-supported suite of tools that are used for lifecycle management of hyperscale clusters of Linux ProLiant systems. CMU includes software for the centralized provisioning, management and monitoring of nodes. CMU makes the administration of clusters user friendly, efficient, and effective. http://www.hp.com/go/cmu
HP HPC Linux Value Pack	HP HPC Linux Value Pack is an HP-licensed and HP-supported option to HP Insight CMU, for the development and deployment of applications on HPC Cluster Platforms. Value Pack includes the Platform LSF workload scheduler and Platform Application Center, as well as the HP-MPI parallelization library. http://h20311.www2.hp.com/hpc/us/en/linux-value-pack.html.

HP Insight Online

HP Insight Online is a new addition to the HP Support Center for one stop, secure access to product and HP support information personalized to your IT environment. Insight Online can automatically display devices remotely monitored by HP Insight Remote Support. With Insight Online's easy navigation you can efficiently track your IT support contracts and device status from anywhere and at anytime.
http://www.hp.com/go/insightonline

Optional Features

Expansion Blade Support	Supports one (1) optional storage, tape, or PCI expansion blade.
Factory Express Portfolio for Servers and Storage	HP Factory Express offers configuration, customization, integration and deployment services for HP servers and storage products. Customers can choose how their factory solutions are built, tested, integrated, shipped and deployed. Factory Express offers service packages for simple configuration, racking, installation, complex configuration and design services as well as individual factory services, such as image loading, asset tagging, and custom packaging. HP products supported through Factory Express include a wide array of servers and storage: HP Integrity, HP ProLiant, HP ProLiant Server Blades, HP BladeSystem, HP 9000 servers as well as the MSAxxxx, VA7xxx, EVA, XP, rackable tape libraries and configurable network switches. For more information on Factory Express services on your specific server model please contact your sales representative or go to: http://www.hp.com/go/factory-express.html
HP Enterprise Configurator	The HP e-Configure Enterprise Configurator now provides factory default racking for our HP hardware portfolio. This approach is aligned with our strategic direction to meet the needs and expectations of our valued customers. If you require "custom" rack configuration, please contact HP's Customer Business Center or an Authorized Partner for assistance. http://www.hp.com/products/configurator

Service and Support

HP Technology Services for Industry Standard Servers and BladeSystem
Capitalizing on HP ProLiant server and HP BladeSystem capabilities requires a service partner who understands your increasingly complex business technology environment. That's why it makes sense to team up with the people who know HP infrastructure hardware and software best - the experienced professionals at HP Services.

What HP ProLiant and BladeSystem Services can do for you
HP ProLiant and BladeSystem Services can help you design, deploy, test, integrate, support, and manage IT and infrastructure solutions. This way, HP proposes services solutions that include more than just uplift of base warranty. Foundation Care services deliver scalable support-packages for HP industry-standard servers and software. You can choose the type and level of service that is most suitable for their business needs. New to this portfolio is HP Collaborative Support. If you are running business critical environments, HP offers Proactive Care or Critical Advantage. These services help deliver high levels of application availability through proactive service management and advanced technical response.

You can get the support you need by choosing from one of a number of service packaged solutions we have designed to address wider set of customer support needs.

HP Technology Services meets business challenges with services offered in three support
recommendations - Optimized Care Package, Standard Care Package, and Basic Care - available for each product group. Such packaged solutions enable customers to optimize technology operations, minimize risk and drive better business outcomes with easy-to-buy, easy-to-use scalable support packages for servers, storage, networking and software.

All three service recommendations include support services from the broader portfolio of Foundation Care and Proactive Care services.

Optimized Care Package

Supports maintaining servers at optimum performance availability

HP Installation and Startup Service for HP BladeSystem c-Class Infrastructure for c3000/c7000 enclosure
Provides for the installation and startup of a BladeSystem c3000 Infrastructure in a single blade enclosure including hardware and software, including deployment of OS, HP SIM, RDP, RDP, PMP and VPM. http://h20195.www2.hp.com/V2/GetPDF.aspx/4AA0-5964ENW.pdf

3-Year HP 24x7 4 hour Response, Proactive Care OR Critical Advantage for c3000/c7000 enclosure + 3-Year HP 24x7 4 hour Response, Proactive Care or Critical Advantage for Blade server
Helps optimize your systems and delivers high levels of application availability through proactive service management and advanced technical response. A skilled Technical Manager will own your query or issue end to end until resolved, delivering a single point of contact for you.
http://h20195.www2.hp.com/V2/GetPDF.aspx/4AA3-2140ENW.pdf

Additional Services: Virtualization Services - Strategy, Design, Transition, Operation, Continual Service Improvement.

Service and Support

Standard Care Package	Support Recommendation that maintains high level of server availability

HP Installation and Startup Service for HP BladeSystem c-Class Infrastructure for c3000/c7000 enclosure
Provides for the installation and startup of a BladeSystem c3000/c7000 Infrastructure in a single blade enclosure including hardware and software, including deployment of OS, HP SIM, RDP, RDP, PMP and VPM
http://h20195.www2.hp.com/V2/GetPDF.aspx/4AA0-5964ENW.pdf

HP Installation and Startup Service for HP BladeSystem c-Class Enhanced Network
HP Provides for the configuration and testing of BladeSystem Ethernet interconnect switches to facilitate proper implementation of network protocols and access to advanced features
http://h20195.www2.hp.com/V2/GetPDF.aspx/4aa0-5969ENW.pdf

3-Year, HP 24x7 4 hour Response, Collaborative Support for c3000/c7000 enclosure + 3-Year, HP 24x7 4 hour Response, Collaborative Support for Blade server
Offers customers a single point of contact for server problem diagnosis, hardware problem resolution, and basic software problem diagnosis, fault isolation, and resolution if available to HP. If the problem is with HP HW, the representative will arrive on site any time and day of the year to begin hardware maintenance service within 4 hours of the service request being logged. In case, the issue is with HP or supported third-party software product and cannot be resolved by applying known fixes, HP will contact the third-party vendor and create a problem incident on your behalf.

3-Year , HP 24x7 Software Support for Insight Control
Provides for the deployment and basic configuration of HP Insight Control on HP ProLiant ML and DL series servers or HP BladeSystem servers
http://h20195.www2.hp.com/V2/GetPDF.aspx/5981-6645EEE.pdf

1-Year HP Proactive Select 30 Credit
Provides a flexible way to purchase HP best-in-class consultancy and technical services
http://h20195.www2.hp.com/v2/GetPDF.aspx/4AA2-3842ENN.pdf

Additional Services: Software OS (Microsoft, Linux (SUSE/Red Hat) & VMware Installation & Start Up and Software Support); Microsoft or Linux or VMware education courses; +60 Proactive Select Credits, Factory Express.

Service and Support

Basic Care Package	Delivers minimum recommended support service level HP Installation and Startup Service for HP BladeSystem c-Class Infrastructure for c3000/c7000 enclosure Provides for the installation and startup of a BladeSystem c3000/c7000 Infrastructure in a single blade enclosure including hardware and software, including deployment of OS, HP SIM, RDP, RDP, PMP and VPM http://h20195.www2.hp.com/V2/GetPDF.aspx/4AA0-5964ENW.pdf 3-Year, HP 24x7 4 hour Response, Hardware Support Onsite Service for c3000/c7000 enclosure + 3-Year, HP 24x7 4 hour Response, Hardware Support Onsite Service for Blade server Provides you with rapid remote support and if required an HP authorized representative who will arrive on site any time and day of the year to begin hardware maintenance service within 4 hours of the service request being logged http://h20195.www2.hp.com/V2/GetPDF.aspx/5982-6547EEE.pdf 3-Year , HP 24x7 Software Support for Insight Control Provides for the deployment and basic configuration of HP Insight Control on HP ProLiant ML and DL series servers or HP BladeSystem servers http://h20195.www2.hp.com/V2/GetPDF.aspx/5981-6645EEE.pdf 1-Year HP Proactive Select 10 Credit Provides a flexible way to purchase HP best-in-class consultancy and technical services http://h20195.www2.hp.com/v2/GetPDF.aspx/4AA2-3842ENN.pdf Additional Services: Startup Blade System c-Cass Enhanced Network Service; Software OS (Microsoft, Linux (SUSE/Red Hat) & VMware Installation & Start Up and Software Support); +30 Proactive Select Credits, Factory Express
Insight Remote Support	Provides 24 X 7 remote monitoring, proactive notifications, and problem resolution. Learn more http://www.hp.com/go/insightremotesupport
HP Support Center	Personalized online support portal with access to information, tools and experts to support HP business products. Submit support cases online, chat with HP experts, access support resources or collaborate with peers. Learn more http://www.hp.com/go/hpsc HP's Support Center Mobile App* allows you to resolve issues yourself or quickly connect to an agent for live support. Now, you can get access to personalized IT support anywhere, anytime. HP Insight Remote Support and HP Support Center are available at no additional cost with a HP warranty, HP Care Pack or HP contractual support agreement. *HP' Support Center Mobile App is subject to local availability.

Service and Support

Warranty / Service Coverage	For ProLiant servers and storage systems, the services cover HP-branded hardware options qualified for the server, purchased at the same time or afterward, internal to the enclosure, as well as external monitors up to 22" and tower UPS products; these items will be covered at the same service level and for the same coverage period as the server unless the maximum supported lifetime and/or the maximum usage limitation has been exceeded. Coverage of the UPS battery is not included; standard warranty terms and conditions apply. The defective media retention service feature option applies only to Disk or eligible SSD/Flash Drives replaced by HP due to malfunction. It does not apply to any exchange of Disk or SSD/Flash Drives that have not failed. SSD/Flash Drives that are specified by HP as consumable parts and/or that have exceeded maximum supported lifetime and/or the maximum usage limit as set forth in the manufacturer's operating manual or the technical data sheet are not eligible for the defective media retention service feature option.
For more information	To learn more on HP ProLiant servers and HP BladeSystem servers, please contact your HP sales representative or HP Authorized Channel Partner. Or visit: www.hp.com/services/bladesystem

Models

HP ProLiant BL460c Gen8 E5-2670 2.60GHz 8-core 2P 64GB-R P220i Server 666157-B21	Processor(s)	(2) Intel® Xeon® E5-2670 (2.60GHz/8-core/20MB/115W) (2P)
	Cache Memory	20MB (1x20MB) Level 3 cache
	Memory	64GB (8x 8GB) PC3-12800R (DDR3-1600) Registered DIMMS at 1.5V) NOTE: Total of 16 DIMM slots.
	Network Controller	HP FlexFabric 10Gb 2-port 554FLB FlexibleLOM
	Storage Controller	HP Smart Array P220i Controller with 512MB FBWC RAID 0,1
	Hard Drive	None ship standard Supports up to two (2) HP hot-plug SFF SAS/SATA/SDD drives
	Internal Storage	SAS: 2.0TB; SATA: 2.0TB; SAS SSD: 1.6TB
	Optical Drive Bay	None
	Expansion Slots	2 standard - Slot1supports Type A mezzanine Cards. Slot 2 supports Type A and Type B mezzanine cards.
	Management	iLO Management Engine Standard Optional: HP Insight Control
	Form Factor	Up to eight (8) half-height blades supported in the HP BladeSystem c3000 Enclosure Up to sixteen (16) half-height blades supported in HP BladeSystem c7000 Enclosure
	Warranty	Server warranty includes 3 year Parts, 3 year Labor, 3-year on-site support.

HP ProLiant BL460c Gen8 E5-2660 2.20GHz 8-core 2P 64GB-R P220i SFF Server 666158-B21	Processor(s)	(2) Intel® Xeon® E5-2660 (2.20GHz/8-core/20MB/95W) (2P)
	Cache Memory	20MB (1x20MB) Level 3 cache
	Memory	64GB (8x 8GB) PC3-12800R (DDR3-1600) Registered DIMMS at 1.5V) NOTE: Total of 16 DIMM slots.
	Network Controller	HP FlexFabric 10Gb 2-port 554FLB FlexibleLOM
	Storage Controller	HP Smart Array P220i Controller with 512MB FBWC RAID 0,1
	Hard Drive	None ship standard Supports up to two (2) HP hot-plug SFF SAS/SATA/SDD drives
	Internal Storage	SAS: 2.0TB; SATA: 2.0TB; SAS SSD: 1.6TB
	Optical Drive Bay	None
	Expansion Slots	2 standard - Slot1supports Type A mezzanine Cards. Slot 2 supports Type A and Type B mezzanine cards.
	Management	iLO Management Engine Standard Optional: HP Insight Control
	Form Factor	Up to eight (8) half-height blades supported in the HP BladeSystem c3000 Enclosure Up to sixteen (16) half-height blades supported in HP BladeSystem c7000 Enclosure
	Warranty	Server warranty includes 3 year Parts, 3 year Labor, 3-year on-site support.

Models

HP ProLiant BL460c Gen8 E5-2650 2.0GHz 8-core 1P 32GB-R P220i SFF Server 666159-B21	Processor(s)	(1) Intel® Xeon® E5-2650 (2.0GHz/8-core/20MB/95W) (1P)
	Cache Memory	20MB (1x20MB) Level 3 cache
	Memory	32GB (4x 8GB) PC3-12800R (DDR3-1600 Registered DIMMs at 1.5V) NOTE: Total of 16 DIMM slots. Only eight (8) usable with single processor.
	Network Controller	HP FlexFabric 10Gb 2-port 554FLB FlexibleLOM
	Storage Controller	HP Smart Array P220i Controller with 512MB FBWC RAID 0,1
	Hard Drive	None ship standard Supports up to two (2) HP hot-plug SFF SAS/SATA/SDD drives
	Internal Storage	SAS: 2.0TB; SATA: 2.0TB; SAS SSD: 1.6TB
	Optical Drive Bay	None
	Expansion Slots	2 standard - Slot1supports Type A mezzanine Cards. Slot 2 supports Type A and Type B mezzanine cards.
	Management	iLO Management Engine Standard Optional: HP Insight Control
	Form Factor	Up to eight (8) half-height blades supported in the HP BladeSystem c3000 Enclosure Up to sixteen (16) half-height blades supported in HP BladeSystem c7000 Enclosure
	Warranty	Server warranty includes 3 year Parts, 3 year Labor, 3-year on-site support.

HP ProLiant BL460c Gen8 E5-2650L 1.80GHz 8-core 1P 32GB-R P220i SFF Server 666163-B21	Processor(s)	(1) Intel® Xeon® E5-2650L (1.80GHz/8-core/20MB/70W) (1P)
	Cache Memory	20MB Level 3 cache
	Memory	32GB (4x 8GB) PC3L-10600R (DDR3-1333 Registered DIMMs at 1.35V) NOTE: Total of 16 DIMM slots. Only eight (8) usable with single processor.
	Network Controller	HP FlexFabric 10Gb 2-port 554FLB FlexibleLOM
	Storage Controller	HP Smart Array P220i Controller with 512MB FBWC RAID 0,1
	Hard Drive	None ship standard Supports up to two (2) HP hot-plug SFF SAS/SATA/SDD drives
	Internal Storage	SAS: 2.0TB; SATA: 2.0TB; SAS SSD: 1.6TB
	Optical Drive Bay	None
	Expansion Slots	2 standard - Slot1supports Type A mezzanine Cards. Slot 2 supports Type A and Type B mezzanine cards.
	Management	iLO Management Engine Standard Optional: HP Insight Control
	Form Factor	Up to eight (8) half-height blades supported in the HP BladeSystem c3000 Enclosure Up to sixteen (16) half-height blades supported in HP BladeSystem c7000 Enclosure
	Warranty	Server warranty includes 3 year Parts, 3 year Labor, 3-year on-site support.

Models

HP ProLiant BL460c Gen8 E5-2640 2.50GHz 6-core 1P 32GB-R P220i SFF Server 666160-B21	Processor(s)	(1) Intel® Xeon® E5-2640 (2.50GHz/6-core/15MB/95W) (1P)
	Cache Memory	15MB (1x15MB) Level 3 cache
	Memory	32GB (4x 8GB) PC3L-10600R (DDR3-1333 Registered DIMMs at 1.35V) NOTE: Total of 16 DIMM slots. Only eight (8) usable with single processor.
	Network Controller	HP FlexFabric 10Gb 2-port 554FLB FlexibleLOM
	Storage Controller	HP Smart Array P220i Controller with 512MB FBWC RAID 0,1
	Hard Drive	None ship standard Supports up to two (2) HP hot-plug SFF SAS/SATA/SDD drives
	Internal Storage	SAS: 2.0TB; SATA: 2.0TB; SAS SSD: 1.6TB
	Optical Drive Bay	None
	Expansion Slots	2 standard - Slot1supports Type A mezzanine Cards. Slot 2 supports Type A and Type B mezzanine cards.
	Management	iLO Management Engine Standard Optional: HP Insight Control
	Form Factor	Up to eight (8) half-height blades supported in the HP BladeSystem c3000 Enclosure Up to sixteen (16) half-height blades supported in HP BladeSystem c7000 Enclosure
	Warranty	Server warranty includes 3 year Parts, 3 year Labor, 3-year on-site support.

HP ProLiant BL460c Gen8 E5-2620 2.0GHz 6-core 1P 16GB-R P220i SFF Server 666161-B21	Processor(s)	(1) Intel® Xeon® E5-2620 (2.0GHz/6-core/15MB/95W) (1P)
	Cache Memory	15MB (1x15MB) Level 3 cache
	Memory	16GB (4x 4GB) PC3L-10600R (DDR3-1333) Registered DIMMs at 1.35V) NOTE: Total of 16 DIMM slots. Only eight (8) usable with single processor.
	Network Controller	HP FlexFabric 10Gb 2-port 554FLB FlexibleLOM
	Storage Controller	Smart Array P220i Controller with 512MB FBWC RAID 0,1
	Hard Drive	None ship standard Supports up to two (2) HP hot-plug SFF SAS/SATA/SDD drives
	Internal Storage	SAS: 2.0TB; SATA: 2.0TB; SAS SSD: 1.6TB
	Optical Drive Bay	None
	Expansion Slots	2 standard - Slot1supports Type A mezzanine Cards. Slot 2 supports Type A and Type B mezzanine cards.
	Management	iLO Management Engine Standard Optional: HP Insight Control
	Form Factor	Up to eight (8) half-height blades supported in the HP BladeSystem c3000 Enclosure Up to sixteen (16) half-height blades supported in HP BladeSystem c7000 Enclosure
	Warranty	Server warranty includes 3 year Parts, 3 year Labor, 3-year on-site support.

Models

HP ProLiant BL460c Gen8 E5-2609 2.40GHz 4-core 1P 16GB-R P220i SFF Server 666162-B21	Processor(s)	(1) Intel® Xeon® E5-2609 (2.40GHz/4-core/10MB/80W) (1P)
	Cache Memory	10MB (1x10MB) Level 3 cache
	Memory	16GB (4x 4GB) PC3L-10600R (DDR3-1333) Registered DIMMs at 1.35V) NOTE: Total of 16 DIMM slots. Only eight (8) usable with single processor.
	Network Controller	HP FlexFabric 10Gb 2-port 554FLB FlexibleLOM
	Storage Controller	HP Smart Array P220i Controller with 512MB FBWC RAID 0,1
	Hard Drive	None ship standard Supports up to two (2) HP hot-plug SFF SAS/SATA/SDD drives
	Internal Storage	SAS: 2.0TB; SATA: 2.0TB; SAS SSD: 1.6TB
	Optical Drive Bay	None
	Expansion Slots	2 standard - Slot1supports Type A mezzanine Cards. Slot 2 supports Type A and Type B mezzanine cards.
	Management	iLO Management Engine Standard Optional: HP Insight Control
	Form Factor	Up to eight (8) half-height blades supported in the HP BladeSystem c3000 Enclosure Up to sixteen (16) half-height blades supported in HP BladeSystem c7000 Enclosure
	Warranty	Server warranty includes 3 year Parts, 3 year Labor, 3-year on-site support.

Smart Buys

HP ProLiant BL460c Gen8 E5-2650 2P Svr/S-Buy 670656-S01	Processor(s)	(2) Intel® Xeon® E5-2650 (2.0GHz/8-core/20MB/95W), 64GB
	Cache Memory	20MB (1x20MB) Level 3 cache
	Memory	64GB (8x 8GB) PC3L-12800R (DDR3-1600) Registered DIMMs at 1.5V) NOTE: Total of 16 DIMM slots.
	Network Controller	HP FlexFabric 10Gb 2-port 554FLB FlexLOM
	Storage Controller	HP Smart Array P220i Controller with 512MB FBWC RAID 0,1
	Hard Drive	None ship standard Supports up to two (2) HP hot-plug SFF SAS/SATA/SDD drives
	Internal Storage	SAS: 2.0TB; SATA: 2.0TB; SAS SSD: 1.6TB
	Optical Drive Bay	None
	Expansion Slots	2 standard - Slot1supports Type A mezzanine Cards. Slot 2 supports Type A and Type B mezzanine cards.
	Management	iLO Management Engine Standard
	Form Factor	Up to eight (8) half-height blades supported in the HP BladeSystem c3000 Enclosure Up to sixteen (16) half-height blades supported in HP BladeSystem c7000 Enclosure
	Warranty	Server warranty includes 3 year Parts, 3 year Labor, 3-year on-site support.
HP ProLiant BL460c Gen8 E5-2640 2P Svr/S-Buy 670657-S01	Processor(s)	(2) Intel® Xeon® E5-2640 (2.50GHz/6-core/15MB/95W)
	Cache Memory	15MB (1x15MB) Level 3 cache
	Memory	48GB (6x 8GB) PC3L-10600R (DDR3-1333) Registered DIMMs at 1.35V) NOTE: Total of 16 DIMM slots.
	Network Controller	HP FlexFabric 10Gb 2-port 554FLB FlexLOM
	Storage Controller	HP Smart Array P220i Controller with 512MB FBWC RAID 0,1
	Hard Drive	None ship standard Supports up to two (2) HP hot-plug SFF SAS/SATA/SDD drives
	Internal Storage	SAS: 2.0TB; SATA: 2.0TB; SAS SSD: 1.6TB
	Optical Drive Bay	None
	Expansion Slots	2 standard - Slot1supports Type A mezzanine Cards. Slot 2 supports Type A and Type B mezzanine cards.
	Management	iLO Management Engine Standard
	Form Factor	Up to eight (8) half-height blades supported in the HP BladeSystem c3000 Enclosure Up to sixteen (16) half-height blades supported in HP BladeSystem c7000 Enclosure
	Warranty	Server warranty includes 3 year Parts, 3 year Labor, 3-year on-site support.

Smart Buys

HP ProLiant BL460c Gen8 E5-2620 2P Svr/S-Buy 670658-S01	Processor(s)	(2) Intel® Xeon® E5-2620 (2.0GHz/6-core/15MB/95W)
	Cache Memory	15MB (1x15MB) Level 3 cache
	Memory	32GB (4x 8GB) PC3L-10600R (DDR3-1333) Registered DIMMs at 1.35V) NOTE: Total of 16 DIMM slots.
	Network Controller	HP FlexFabric 10Gb 2-port 554FLB FlexLOM
	Storage Controller	HP Smart Array P220i Controller with 512MB FBWC RAID 0,1
	Hard Drive	None ship standard Supports up to two (2) HP hot-plug SFF SAS/SATA/SDD drives
	Internal Storage	SAS: 2.0TB; SATA: 2.0TB; SAS SSD: 1.6TB
	Optical Drive Bay	None
	Expansion Slots	2 standard - Slot1supports Type A mezzanine Cards. Slot 2 supports Type A and Type B mezzanine cards.
	Management	iLO Management Engine Standard
	Form Factor	Up to eight (8) half-height blades supported in the HP BladeSystem c3000 Enclosure Up to sixteen (16) half-height blades supported in HP BladeSystem c7000 Enclosure
	Warranty	Server warranty includes 3 year Parts, 3 year Labor, 3-year on-site support.

NOTE: This section lists some of the steps required to configure a Factory Integrated Model (configure-to-order or CTO server). To ensure only valid configurations are ordered, HP recommends the use of an HP approved configurator. Contact your local sales representative for information on CTO product offerings and requirements.
NOTE: Configure-to-order server blades must start with a CTO Blade.
NOTE: FIO indicates that this option is only available as a factory installable option.

Step 1: Base Server Blade Configuration (Select a configurable Blade)

Models	HP ProLiant BL460c Gen8 Configure-to-order Server	641016-B21
	Configurable Model ships with:	
	One (1) FlexibleLOM connector providing a choice of supported FlexibleLOMs (see Step 2) One (1) HP Smart Array P220i Controller with 512MB FBWC and RAID 0 and 1 support Two (2) cache slots for FBWC supercap options Two (2) HP small form factor hot-plug SAS/SATA/SSD hard drive bays Two (2) x16 PCIe I/O expansion slots (one Type A, one Type A/B) One (1) integrated USB connector and one (1) MicroSDHC connector One (1) TPM connector On System Server Management Processor - HP iLO 4 (embedded)	

Step 2: Choose Required Options (one of the following from each list unless otherwise noted)

HP Processors	Core Processor Option Kits	
	NOTE: The BL460c Gen8 supports one or two processors. NOTE: All configure-to-order processor kits (i.e. xxxxxx-L21) contain one (1) processor. NOTE: If two processors are desired, select one xxxxxx-L21 here in Step 2 and one xxxxxx-B21 in Step 3. NOTE: The BL460c Gen8 includes two I/O mezzanine expansion slots. A processor must be installed in processor slot 1 for access to the first mezzanine expansion slot (expansion slot 1). A processor must be installed in processor slot 2 for access to the second mezzanine expansion slot (expansion slot 2). NOTE: All processors within the server must be identical. NOTE: All processors support Intel® Hyper-Threading and Intel® Turbo Boost Technologies except the E5-2603 and E5-2609. NOTE: The letter "L" following the model number indicates denotes lower wattage. NOTE: The processor model as well as the memory configuration determines the maximum speed memory can operate. Please see the see the "Memory" section later in this document. NOTE: The Intel Xeon E5-2620 processor does not support DIMMs at 1.35V. Using the HP RBSU, 1.35V DIMMs can be changed to operate at 1.5V.	
	Eight-Core Processors	
	HP BL460c Gen8 Intel® Xeon® E5-2680 (2.70GHz/8-core/20MB/130W) FIO Processor Kit	662063-L21
	HP BL460c Gen8 Intel® Xeon® E5-2670 (2.60GHz/8-core/20MB/115W) FIO Processor Kit	662064-L21
	HP BL460c Gen8 Intel® Xeon® E5-2665 (2.40GHz/8-core/20MB/115W) FIO Processor Kit	667803-L21

	HP BL460c Gen8 Intel® Xeon® E5-2660 (2.20GHz/8-core/20MB/95W) FIO Processor Kit	662065-L21
	HP BL460c Gen8 Intel® Xeon® E5-2650 (2.0GHz/8-core/20MB/95W) FIO Processor Kit	662066-L21
	HP BL460c Gen8 Intel® Xeon® E5-2650L (1.80GHz/8-core/20MB/70W) FIO Processor Kit	662078-L21
	Six-Core Processors	
	HP BL460c Gen8 Intel® Xeon® E5-2667 (2.90GHz/6-core/15MB/130W) FIO Processor Kit	667804-L21
	HP BL460c Gen8 Intel® Xeon® E5-2640 (2.50GHz/6-core/15MB/95W) FIO Processor Kit	662067-L21
	HP BL460c Gen8 Intel® Xeon® E5-2630 (2.30GHz/6-core/15MB/95W) FIO Processor Kit	662068-L21
	HP BL460c Gen8 Intel® Xeon® E5-2630L (2.0GHz/6-core/15MB/60W) FIO Processor Kit	662079-L21
	HP BL460c Gen8 Intel® Xeon® E5-2620 (2.0GHz/6-core/15MB/95W) FIO Processor Kit	662069-L21
	Quad-Core Processors	
	HP BL460c Gen8 Intel® Xeon® E5-2609 (2.40GHz/4-core/10MB/80W) FIO Processor Kit	662070-L21
	HP BL460c Gen8 Intel® Xeon® E5-2603 (1.80GHz/4-core/10MB/80W) FIO Processor Kit	667805-L21
	Dual-Core Processors	
	HP BL460c Gen8 Intel® Xeon® E5-2637 (3.0GHz/2-core/5MB/80W) FIO Processor Kit	662077-L21
HP Memory	NOTE: HP memory from previous generation servers are not qualified or warranted with this HP ProLiant BL460c Server. HP SmartMemory is required to realize the memory performance improvements and enhanced functionality listed in this document for Gen8. For additional information, please see the HP SmartMemory QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/14225_na/14225_na.html NOTE: LRDIMM, RDIMM and UDIMMs are all distinct memory technologies and cannot be mixed within a server. The majority of ProLiant Gen8 servers support RDIMM, UDIMM and LRDIMM. NOTE: A minimum of one DIMM is required per server. NOTE: For additional memory rules and guidelines, see the "Memory" section later in this document.	
	HP SmartMemory	
	Registered DIMMs (RDIMMs)	
	HP 16GB (1x16GB) Dual Rank x4 PC3-12800R (DDR3-1600) Registered CAS-11 Memory Kit	672631-B21
	HP 8GB (1x8GB) Single Rank x4 PC3-12800R (DDR3-1600) Registered CAS-11 Memory Kit	647899-B21
	HP 4GB (1x4GB) Single Rank x4 PC3-12800R (DDR3-1600) Registered CAS-11 Memory Kit	647895-B21
	HP 16GB (1x16GB) Dual Rank x4 PC3L-10600R (DDR3-1333) Registered CAS-9 Low Voltage Memory Kit	647901-B21

	HP 8GB (1x8GB) Dual Rank x4 PC3L-10600R (DDR3-1333) Registered CAS-9 Low Voltage Memory Kit	647897-B21
	HP 4GB (1x4GB) Single Rank x4 PC3L-10600R (DDR3-1333) Registered CAS-9 Low Voltage Memory Kit	647893-B21
	Unbuffered with ECC DIMMs (UDIMMs)	
	HP 8GB (1x8GB) Dual Rank x8 PC3L-10600E (DDR3-1333) Unbuffered CAS-9 Low Voltage Memory Kit	647909-B21
	HP 4GB (1x4GB) Dual Rank x8 PC3L-10600E (DDR3-1333) Unbuffered CAS-9 Low Voltage Memory Kit	647907-B21
	HP 2GB (1x2GB) Single Rank x8 PC3L-10600 (DDR3-1333) Unbuffered CAS-9 Low Power Memory Kit	647905-B21
	Load Reduced DIMMs (LRDIMMs)	
	HP 32GB (1x32GB) Quad Rank x4 PC3L-10600L (DDR3-1333) Load Reduced CAS-9 Low Voltage Memory Kit	647903-B21
	NOTE: Depending on the memory configuration and processor model, 1600MHz and 1333MHz memory may operate at a lower speed. Please see the see the "Memory" section later in this document and the Online Memory Configuration Tool for details at www.hp.com/go/ddr3memory-configurator.	
HP Networking	FlexibleLOM Adapters NOTE: The server requires one FlexibleLOM that is installed in the FlexibleLOM connector. All FlexibleLOMs are dual port: One port is routed to interconnect module bay 1 and the other to bay 2.	
	HP FlexFabric 10Gb 2-port 554FLB FIO Adapter	684212-B21
	HP Flex-10 10Gb 2-port 530FLB FIO Adapter	684211-B21
	NOTE: Please see the QuickSpecs for Technical Specifications and additional information: www.hp.com/go/ProLiantNICs	

Step 3: Choose Additional Options for Factory Integration

NOTE: For additional options, please refer to the "Core Options" and "Additional Options" section below. For additional options, including server blade enclosures interconnect, mezzanine options and power subsystem options; please see the Core Options and Additional sections below; or the following:

- HP BladeSystem c3000 Enclosure QuickSpecs: http://h18000.www1.hp.com/products/quickspecs/12790_div/12790_div.html
- HP BladeSystem c7000 Enclosure QuickSpecs: http://h18000.www1.hp.com/products/quickspecs/12810_div/12810_div.html
- HP BladeSystem c-Class Interconnect and Mezzanine Components: http://h18004.www1.hp.com/products/blades/components/c-class-interconnects.html and http://h18004.www1.hp.com/products/blades/components/c-class-adapters.html

Core Options

HP Networking	10 Gigabit Ethernet Mezzanines NOTE: Each 10 Gigabit Ethernet adapter requires a minimum of 2GB of server memory. NOTE: A 10 Gigabit Ethernet adapter supports linking at 1Gbps or 10Gbps when connected to an interconnect module with 10Gb Ethernet downlinks. NOTE: A 10 Gigabit Ethernet adapter supports linking at only 1Gbps when connected to an interconnect module with 1Gb Ethernet downlinks. NOTE: The 10 Gigabit Ethernet adapters on each server blade connects to a 10Gb interconnect in bays 3-6 (HP BladeSystem c7000 Enclosure) or bays 2-4 (HP BladeSystem c3000 Enclosure).	
	HP FlexFabric 10Gb 2-port 554M Adapter NOTE: Please see QuickSpecs for technical specifications and additional information at http://h18000.www1.hp.com/products/quickspecs/14221_na/14221_na.html.	647590-B21
	HP Flex-10 10Gb 2-port 530M Adapter NOTE: Please see QuickSpecs for technical specifications and additional information at http://h18000.www1.hp.com/products/quickspecs/14217_na/14217_na.html .	631884-B21
	HP Flex-10 10Gb 2-port 552M Adapter NOTE: Please see QuickSpecs for technical specifications and additional information at http://h18000.www1.hp.com/products/quickspecs/14218_na/14218_na.html.	674764-B21
	FlexibleLOM Adapters NOTE: The server supports one FlexibleLOM that is installed in the FlexibleLOM connector and is already included in Pre-configured Models and added per Step 2 for Factory Integrated Models. The FlexibleLOM options below are used to change these original FlexibleLOMs.	
	HP FlexFabric 10Gb 2-port 554FLB Adapter NOTE: Please see QuickSpecs for technical specifications and additional information at http://h18000.www1.hp.com/products/quickspecs/14219_na/14219_na.html.	647586-B21
	HP Flex-10 10Gb 2-port 530FLB Adapter NOTE: Please see QuickSpecs for technical specifications and additional information at http://h18000.www1.hp.com/products/quickspecs/14216_na/14216_na.html.	656590-B21
HP Fibre Channel	HP QMH2572 8Gb Fibre Channel Host Bus Adapter NOTE: Please see QuickSpecs for technical specifications and additional information at http://h18000.www1.hp.com/products/quickspecs/14230_na/14230_na.html	651281-B21

Core Options

HP Processors

NOTE: The BL460c Gen8 supports one or two processors.
NOTE: The BL460c Gen8 includes two I/O mezzanine expansion slots. A processor must be installed in processor slot 1 for access to the first mezzanine expansion slot (expansion slot 1). A processor must be installed in processor slot 2 for access to the second mezzanine expansion slot (expansion slot 2).
NOTE: All processors within the server must be identical.
NOTE: All processors support Intel® Hyper-Threading and Intel® Turbo Boost Technologies except the E5-2603 and E5-2609.
NOTE: The letter "L" following the model number indicates denotes lower wattage.
NOTE: The processor model as well as the memory configuration determines the maximum speed memory can operate. Please see the see the "Memory" section later in this document
NOTE: The Intel Xeon E5-2620 processor does not support DIMMs at 1.35V. Using the HP RBSU, 1.35V DIMMs can be changed to operate at 1.5V.

Eight-Core Processors	
HP BL460c Gen8 Intel® Xeon® E5-2680 (2.70GHz/8-core/20MB/130W) Processor Kit	662063-B21
HP BL460c Gen8 Intel® Xeon® E5-2670 (2.60GHz/8-core/20MB/115W) Processor Kit	662064-B21
HP BL460c Gen8 Intel® Xeon® E5-2665 (2.40GHz/8-core/20MB/115W) Processor Kit	667803-B21
HP BL460c Gen8 Intel® Xeon® E5-2660 (2.20GHz/8-core/20MB/95W) Processor Kit	662065-B21
HP BL460c Gen8 Intel® Xeon® E5-2650 (2.0GHz/8-core/20MB/95W) Processor Kit	662066-B21
HP BL460c Gen8 Intel® Xeon® E5-2650L (1.80GHz/8-core/20MB/70W) Processor Kit	662078-B21
Six-Core Processors	
HP BL460c Gen8 Intel® Xeon® E5-2667 (2.90GHz/6-core/15MB/130W) Processor Kit	667804-B21
HP BL460c Gen8 Intel® Xeon® E5-2640 (2.50GHz/6-core/15MB/95W) Processor Kit	662067-B21
HP BL460c Gen8 Intel® Xeon® E5-2630 (2.30GHz/6-core/15MB/95W) Processor Kit	662068-B21
HP BL460c Gen8 Intel® Xeon® E5-2630L (2.0GHz/6-core/15MB/60W) Processor Kit	662079-B21
HP BL460c Gen8 Intel® Xeon® E5-2620 (2.0GHz/6-core/15MB/95W) Processor Kit	662069-B21
Quad-Core Processors	
HP BL460c Gen8 Intel® Xeon® E5-2609 (2.40GHz/4-core/10MB/80W) Processor Kit	662070-B21
HP BL460c Gen8 Intel® Xeon® E5-2603 (1.80GHz/4-core/10MB/80W) Processor Kit	667805-B21
Dual-Core Processors	
HP BL460c Gen8 Intel® Xeon® E5-2637 (3.0GHz/2-core/5MB/80W) Processor Kit	662077-B21

Core Options

HP Memory	NOTE: HP memory from previous generation servers are not qualified or warranted with this HP ProLiant BL460c Gen8 Server. HP SmartMemory is required to realize the memory performance improvements and enhanced functionality listed in this document for Gen8. For additional information, please see the HP SmartMemory QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/14225_na/14225_na.html NOTE: LRDIMM, RDIMM and UDIMMs are all distinct memory technologies and cannot be mixed within a server. The majority of ProLiant Gen8 servers support RDIMM, UDIMM and LRDIMM.	
	HP SmartMemory	
	Registered DIMMs (RDIMMs)	
	HP 16GB (1x16GB) Dual Rank x4 PC3-12800R (DDR3-1600) Registered CAS-11 Memory Kit	672631-B21
	HP 8GB (1x8GB) Single Rank x4 PC3-12800R (DDR3-1600) Registered CAS-11 Memory Kit	647899-B21
	HP 4GB (1x4GB) Single Rank x4 PC3-12800R (DDR3-1600) Registered CAS-11 Memory Kit	647895-B21
	HP 16GB (1x16GB) Dual Rank x4 PC3L-10600R (DDR3-1333) Registered CAS-9 Low Voltage Memory Kit	647901-B21
	HP 8GB (1x8GB) Dual Rank x4 PC3L-10600R (DDR3-1333) Registered CAS-9 Low Voltage Memory Kit	647897-B21
	HP 4GB (1x4GB) Single Rank x4 PC3L-10600R (DDR3-1333) Registered CAS-9 Low Voltage Memory Kit	647893-B21
	Unbuffered with ECC DIMMs (UDIMMs)	
	HP 8GB (1x8GB) Dual Rank x8 PC3L-10600E (DDR3-1333) Unbuffered CAS-9 Low Voltage Memory Kit	647909-B21
	HP 4GB (1x4GB) Dual Rank x8 PC3L-10600E (DDR3-1333) Unbuffered CAS-9 Low Voltage Memory Kit	647907-B21
	HP 2GB (1x2GB) Single Rank x8 PC3L-10600 (DDR3-1333) Unbuffered CAS-9 Low Power Memory Kit	647905-B21
	Load Reduced DIMMs (LRDIMMs)	
	HP 32GB (1x32GB) Quad Rank x4 PC3L-10600L (DDR3-1333) Load Reduced CAS-9 Low Voltage Memory Kit	647903-B21
	NOTE: Depending on the memory configuration and processor model, 1600MHz and 1333MHz memory may operate at a lower speed. Please see the see the "Memory" section later in this document and the Online Memory Configuration Tool for details at www.hp.com/go/ddr3memory-configurator.	

Core Options

HP Hard Drives

NOTE: The ProLiant BL460c Gen8 server includes the new HP hot-plug small form factor (SFF) SmartDrive carrier for enhanced management and reduced maintenance errors. HP drives from previous generation servers are not compatible with the BL460c Gen8 drive bays.
NOTE: HP hard drives have either a one year or three year warranty; refer to the specific hard drive QuickSpecs for details.

SAS Hot Plug with Smart Drive SFF (2.5-inch) Enterprise Drives	
HP 900GB 6G SAS 10K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive	652589-B21
HP 600GB 6G SAS 10K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive	652583-B21
HP 450GB 6G SAS 10K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive	652572-B21
HP 300GB 6G SAS 10K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive	652564-B21
HP 300GB 6G SAS 15K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive	652611-B21
HP 146GB 6G SAS 15K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive	652605-B21
HP 72GB 6G SAS 15K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive	652597-B21
SAS Hot Plug Smart Drive SFF (2.5-inch) Midline Drives	
HP 1TB 6G SAS 7.2K rpm SFF (2.5-inch) SC Midline 1yr Warranty Hard Drive	652749-B21
HP 500GB 6G SAS 7.2K rpm SFF (2.5-inch) SC Midline 1yr Warranty Hard Drive	652745-B21

NOTE: Please see QuickSpecs for technical specifications and additional information at http://h18000.www1.hp.com/products/quickspecs/12244_na/12244_na.html.

6G SATA Hot Plug with Smart Drive SFF (2.5-inch) Midline (MDL) Drives	
HP 1TB 6G SATA 7.2K rpm SFF (2.5-inch) SC Midline 1yr Warranty Hard Drive	655710-B21
HP 500GB 6G SATA 7.2K rpm SFF (2.5-inch) SC Midline 1yr Warranty Hard Drive	655708-B21

NOTE: Please see the QuickSpecs for technical specifications and additional information at http://h18000.www1.hp.com/products/quickspecs/13021_na/13021_na.html.

6G SAS MLC Hot Plug SFF (2.5-inch) Enterprise Mainstream Solid State Drives	
HP 800GB 6G SAS MLC SFF (2.5-inch) SC Enterprise Mainstream 3yr Warranty Solid State Drive	653109-B21
HP 400GB 6G SAS MLC SFF (2.5-inch) SC Enterprise Mainstream 3yr Warranty Solid State Drive	653105-B21
HP 200GB 6G SAS MLC SFF (2.5-inch) SC Enterprise Mainstream 3yr Warranty Solid State Drive	658478-B21
6G SAS SLC Hot Plug SFF (2.5-inch) Enterprise Performance Solid State Drives	
HP 400GB 6G SAS SLC SFF (2.5-inch) SC Enterprise Performance 3yr Warranty Solid State Drive	653082-B21
HP 200GB 6G SAS SLC SFF (2.5-inch) SC Enterprise Performance 3yr Warranty Solid State Drive	653078-B21

NOTE: Please see the QuickSpecs for technical specifications and information at http://h18000.www1.hp.com/products/quickspecs/14038_na/14038_na.html.

HP Insight software	HP Insight Control	
	HP Insight Control including 1yr 24x7 Technical Support and Updates Electronic License	T9074BAE
	HP Insight Control including 1yr 24x7 Technical Support and Updates Single Server License	452148-B22
	NOTE: HP Insight Management Media Kit contains DVDs without licenses. Contains HP Systems Insight Manager, HP Insight Control, HP Matrix Operating Environment, and Virtual Connect Enterprise Manager software. Uses an integrated installer to perform quick and accurate software installation and updates.	
	HP Insight Management Media Kit	
	NOTE: HP Insight Management Media Kit contains DVDs without licenses. Contains HP Systems Insight Manager, HP Insight Control, HP Matrix Operating Environment, and Virtual Connect Enterprise Manager software. Uses an integrated installer to perform quick and accurate software installation and updates.	
	NOTE: Electronic and Flexible-Quantity licenses can be used to purchase multiple licenses with a single activation key.	
	NOTE: Customer will receive a license entitlement certificate, which must be redeemed online or via fax in order to obtain the license activation key(s). Includes one year of 24 x 7 HP Software Technical Support Service.	
	NOTE: Licenses ship without media. The HP Insight Management Media Kit can be ordered separately, or can be downloaded at http://www.hp.com/go/insightupdates.	
	NOTE: For additional license kits, please see the QuickSpecs at: http://h18004.www1.hp.com/products/quickspecs/12631_na/12631_na.html	
	HP Insight Control for Linux	
	HP Insight Control for Linux including 1yr 24x7 Support Electronic License	TC213AAE
	NOTE: This part number can be purchased as a single license or as multiple licenses with a single activation key. Customer will receive a license entitlement certificate via e-mail. The license entitlement certificate must be redeemed online or via fax in order to obtain the license activation key(s). Includes one year of 24 x 7 HP Software Technical Support and Update Service.	
	NOTE: Electronic LTUs are only available through limited points of sales; if not available, order a printed license entitlement certificate instead.	
	HP Insight Control for Linux including 1yr 24x7 Support Single Server License	TC209A
	HP Insight Control for Linux Media Kit	TC208A
	NOTE: This optional Media pack DVD contains the ISO image for HP Insight Control for Linux, HP Systems Insight Manager, HP Insight Control power management, HP Insight Control virtual machine management, and an integrated installer. Servers must be acquired separately.	
	NOTE: This Media pack is optional because the latest ISO image and latest updates may be downloaded at no cost from: http://www.hp.com/go/ic-linux (click on Download button).	
	NOTE: Licenses ship without media. The Media Kit for Insight Control for Linux can be ordered separately, or can be downloaded at: http://www.hp.com/go/ic-linux (click on Download button).	
	NOTE: Customer will receive a license entitlement certificate, which must be redeemed online or via fax in order to obtain the license activation key(s). Includes one year of 24 x 7 HP Software Technical Support Service.	
	NOTE: For additional license kits, please see the QuickSpecs at:	

http://h18000.www1.hp.com/products/quickspecs/13019_na/13019_na.html

HP Integrated Lights-Out (iLO) Advanced for ProLiant BladeSystem Remote Management

HP iLO Advanced Blade Electronic License with 3yr 24x7 Tech Support and Updates	BD503AAE
HP iLO Advanced Blade 1 Server License with 3yr 24x7 Tech Support and Updates	BD502A
HP iLO Advanced for BladeSystem including 1yr 24x7 Support Electronic License	TA851AAE
HP iLO Advanced for BladeSystem including 1yr 24x7 Support Single Server License	512488-B21

NOTE: Licenses ship without media. The Media Kit for Insight Control for Linux can be ordered separately, or can be downloaded at http://www.hp.com/go/insightupdates.

NOTE: Customer will receive a license entitlement certificate, which must be redeemed online or via fax in order to obtain the license activation key(s). Includes one year of 24 x 7 HP Software Technical Support Service.
NOTE: For additional license kits, including electronic delivery options, please see the iLO QuickSpecs at: http://www.hp.com/go/iLO

HP Insight Control server deployment

HP Insight Control Server Deployment including 1yr 24x7 Support Electronic License	T9082AAE
HP Insight Control Server Deployment including 1yr 24x7 Support Single Server License	452151-B21

NOTE: Licenses ship without media. The HP Insight Management Media Kit can be ordered separately, or can be downloaded at http://www.hp.com/go/insightupdates.

NOTE: Customer will receive a license entitlement certificate, which must be redeemed online or via fax in order to obtain the license activation key(s). Includes one year of 24 x 7 HP Software Technical Support Service.
NOTE: For additional license kits please see the Insight Control QuickSpecs at http://h18004.www1.hp.com/products/quickspecs/12631_na/12631_na.html.

High Performance Clusters

HP Cluster Management Utility

HP Insight Cluster Management Utility 1yr 24x7 Flexible License	QL803B
HP Insight Cluster Management Utility 3yr 24x7 Flexible License	BD476A

NOTE: These part numbers can be used to purchase one certificate for multiple licenses and support with a single activation key. Each license is for one node (server). Customer will receive a printed end user license agreement and license entitlement certificate via physical shipment. The license entitlement certificate must be redeemed online in order to obtain a license key. Customer also will receive a support agreement.

HP Insight Cluster Management Utility Media	BD477A

NOTE: For additional license kits please see the QuickSpecs at http://h18004.www1.hp.com/products/quickspecs/12612_na/12612_na.html.

HP HPC Linux Value Pack

HP High Performance Computing Linux Value Pack 1 Processor Flexible License	TC293B

NOTE: This part number can be used to purchase one certificate for multiple licenses with a single activation key. Each license is for one socket (a.k.a. processor). Customer will receive a printed end user license agreement and license entitlement certificate via physical shipment. The license entitlement certificate must be redeemed online in order to obtain a license key.
NOTE: For additional license kits please see the QuickSpecs at http://h18004.www1.hp.com/products/quickspecs/13485_na/13485_na.html.

Additional Options

	HP High Performance Computing Linux Value Pack Media Kit NOTE: This part number can be used to purchase media including software and documentation, which will be delivered to the customer.	TC294A
HP Security	HP Trusted Platform Module Option NOTE: The TPM (Trusted Platform Module) is a microcontroller chip that can securely store artifacts used to authenticate the server platform. These artifacts can include passwords, certificates and encryption keys. Windows® BitLocker™ Drive Encryption (BitLocker) is a data protection feature available in Windows Server® 2008. BitLocker leverages the enhanced security capabilities of a Trusted Platform Module (TPM) version 1.2. The TPM works with BitLocker to help protect user data and to ensure that a server running Windows Server 2008 has not been tampered with while the system was offline. NOTE: For more information about TPM, including a white paper, go to http://www.hp.com/go/TPM. NOTE: ProLiant OS pre-installed units will come with the partition required for TPM deployment. NOTE: The TPM key is unique to every TPM deployed server and must be retained. Misplacing or losing the key could result in data loss.	488069-B21
HP Storage Controllers	Optional Upgrades	
	HP Smart Array Advanced Pack 2.0 No Media 1 Server 1yr 24x7 Support Software	BC377A
	HP Smart Array Advanced Pack 2.0 No Media Electronic Lic 1yr 24x7 Support Software	BC390AAE
	NOTE: Please see the Smart Array Advanced Pack QuickSpecs for Technical Specifications and additional information at http://h18000.www1.hp.com/products/quickspecs/13200_div/13200_div.html. (Smart Array Advanced Pack)	
HP InfiniBand Mezzanines	HP QDR/EN InfiniBand 10Gb Dual Port 544M Adapter	644160-B21
	HP FDR/EN InfiniBand 10/40Gb Dual Port 544M Adapter	644161-B21
	NOTE: InfiniBand QDR and FDR speeds are only supported on the HP BladeSystem c7000 Enclosure. For additional information, please see the HP BladeSystem c7000 Enclosure and InfiniBand QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/12810_div/12810_div.html http://h18000.www1.hp.com/products/quickspecs/12586_div/12586_div.html.	
HP Ultrium Tape Blades	HP LTO-4 SB1760c Tape Blade NOTE: LTO-4 Ultrium tape technology.	AQ697A
	HP LTO-5 SB3000c Tape Blade NOTE: LTO-5 Ultrium tape technology.	BS580A
	NOTE: For the above Ultrium tape drives, please see the QuickSpecs for technical specifications and additional information at: http://h18000.www1.hp.com/products/quickspecs/12729_na/12729_na.html	

Additional Options

HP Storage Blades	HP D2200sb Storage Blade NOTE: Please see the QuickSpecs for technical specifications and additional information at http://h18006.www1.hp.com/storage/bladesystem/index.html.	AP880A
HP Expansion Blade	HP BLc PCI Expansion Blade NOTE: The PCI Expansion Blade provides PCI card slots for an adjacent c-Class Server Blade. Order one PCI expansion Blade for each server blade needing standard PCI-X or PCIe expansion slots. NOTE: Ships with one pre-installed PCI-X connect board. Also includes one PCIe connect board which requires installation. NOTE: Please see the QuickSpecs for technical specifications and additional information at http://h18000.www1.hp.com/products/quickspecs/12753_div/12753_div.html	448018-B21
HP USB and SD Options	HP 2GB USB Flash Media Drive Key Kit NOTE: HP qualified blank USB key for use with HP ProLiant servers that support the VMware virtualization environment and other HP value-add software like SmartStart. HP recommends this industry standard USB flash device for use with VMware ESXi. USB device must be installed in the internal slot of the ProLiant server for use with VMware ESXi. Refer to HP VMware Getting Started Guide for installation instructions.	608447-B21
	HP 4GB MicroSDHC Flash Media Kit NOTE: The USB flash media and Secure Digital cards are for integrated hypervisor virtualization environments needing a low cost boot solution with the highest performance and reliability. Learn more at http://h18004.www1.hp.com/products/servers/options/flash_drives.html.	647444-B21
HP Care Pack Services	NOTE: The HP Care Pack service part numbers below for ProLiant BL c-Class server blades, cover the server blade and all HP branded hardware options qualified for the server, purchased at the same time or afterwards, internal to the server.	
	HP 3 year 4 hour 13x5 BL4xxc Server Blade Hardware Support	UK065E
	HP 3 year 4 hour 24x7 BL4xxc Server Blade Hardware Support	UK066E
	HP 3 year 6 hour 24x7 Call to Repair BL4xxc Server Blade Hardware Support	UK067E
	HP 3 year Next business day ProLiant BL4xxc Proactive Care Service	U3B08E
	HP 3 year 4 hour 24x7 ProLiant BL4xxc Proactive Care Service	U3B14E
	HP 3 year Next business day ProLiant BL4xxc Collaborative Support	U1K88E
	HP 3 year 4 hour 24x7 ProLiant BL4xxc Collaborative Support	U1K94E

Memory

For detailed memory configuration rules and guidelines, please use the Online DDR3 Memory Configuration Tool: www.hp.com/go/ddr3memory-configurator

Memory Subsystem Architecture

Each Intel® Xeon® E5-2600 family processor socket contains four memory channels that support two DIMMs each for a total of eight (8) DIMM per installed processor or a grand total of sixteen (16) DIMMs for the server. Up to 32GB capacity DIMMs are supported for 512GB of memory (16 DIMM slots x 32GB per DIMM).

Memory Population Rules and Guidelines:

- A minimum of one DIMM is required per processor.
- Install DIMMs only if the corresponding processor is installed.
- If only one processor is installed in a two processor system, only half of the DIMM slots are available.
- DIMM sizes can be mixed in channel. To maximize performance, it is recommended to balance the total memory capacity between all installed processors and to load the channels similarly whenever possible.
- RDIMMs operating at either 1.35V or 1.5V may be mixed in any order, but the system will power them at the higher voltage.
- LRDIMM, RDIMM and UDIMMs are all distinct memory technologies and cannot be mixed within a server. The majority of ProLiant Gen8 servers support RDIMM, UDIMM and LRDIMM.
- The Intel Xeon E5-2620 processor does not support DIMMs at 1.35V.
- DIMMs of different speeds may be mixed in any order; the server will select a common optimal speed.
- The maximum memory speed is a function of the memory type, memory configuration, and processor model.
- The maximum memory capacity is a function of the memory type and number of installed processors.
- HP memory from previous generation servers is not compatible with the BL460c Gen8 Server Blade.
- To realize the performance memory capabilities listed in this document, HP SmartMemory is required. For additional information, please see the HP SmartMemory QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/14225_na/14225_na.html.
- For memory population rules and additional memory guidelines, please see the BL460c Gen8 user guide at http://www.hp.com/support.

BL460c Gen8 Supported Memory Bandwidth										
DIMM Type	Registered DIMMS (RDIMMs)						Load Reduced (LRDIMMs)	Unbuffered with ECC DIMMs (UDIMMs)		
DIMM Rank	Single Rank (1R)		Dual Rank (2R)	Single Rank (1R)	Dual Rank (2R)	Dual Rank (2R)	Quad Rank (4R)	Single Rank (1R)	Dual Rank (2R)	
DIMM Capacity	4GB	4GB	8GB	8GB	16GB	16GB	32GB	2GB	4GB	8GB
DIMM Native Speed (MHz)	1333	1600	1333	1600	1333	1600	1333	1333	1333	1333
Voltage*	LV	Std	LV	Std	LV	Std	LV	LV	LV	LV
*LV= low voltage at 1.35V; Std = standard voltage at 1.5V.										
SLOTS THAT CAN BE POPULATED										
16 slot servers	16	16	16	16	16	16	16	16	16	16
MAXIMUM CAPACITY (GB)										
16 slot servers	64	64	128	128	256	256	512	32	64	128
POPULATED DIMM SPEED (MHz)										
1 DIMM Per Channel (1DPC)	1333	1600	1333	1600	1333	1600	1333	1333	1333	1333
2 DIMM Per Channel (2DPC)	1333**	1600	1333**	1600	1333**	1600	1333	1333**	1333**	1333**

Memory

**Using HP SmartMemory, 1333MHz RDIMM operate at 1.35V for 2 DIMMs per channel (2DPC). Third party 1333MHz RDIMM memory may only support 1.5V at 2DPC. NOTE: Using HP SmartMemory, UDIMMs at 2DPC are supported up to 1333MHz. Third party UDIMMs at 2DPC may only support up to 1066MHz.
NOTE: Maximum memory speed is a function of the processor QPI bus speed; see the table below "Memory Speed by Processor Model".

Memory Speed by Processor Model

Processor Models	Supported Memory Speeds
E5-2680, E5-2670, E5-2667, E5-2665, E5-2660, E5-2650, E5-2650L, E5-2637	1600/1333/1066MHz
E5-2640, E5-2630, E5-2630L, E5-2620	1333/1066MHz
E5-2609, E5-2603	1066MHz

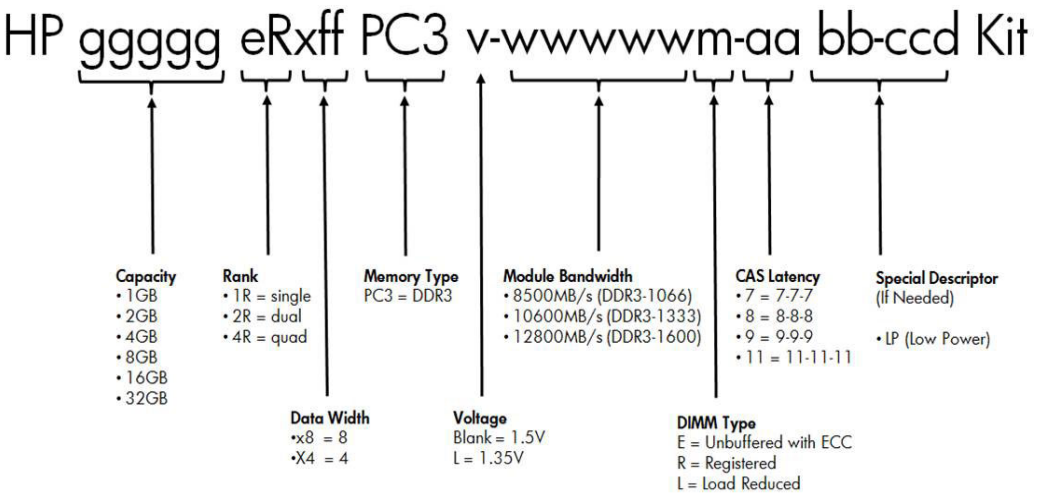
Standard and Maximum Memory Capacity (Pre-configured Models)

Pre Configured Models	Standard Memory	Maximum Memory Plus Optional Memory	Standard Memory Replaced with Optional Memory
Intel Xeon E5-2670, E5-2660	64GB (8x 8GB)	192GB (8x 8GB + 8x 16GB)	512GB (16x 32GB)
Intel Xeon E5-2650, E5-2650L	32GB (4x 8GB)	224GB (4x 8GB + 12x 16GB)	512GB (16x 32GB)
Intel Xeon E5-2620, E5-2609	16GB (4x 4GB)	208GB (4x 4GB + 12x 16GB)	512GB (16x 32GB)

NOTE: Capacity references are rounded to the common gigabyte (GB) values.

- 2GB = 2,048MB
- 4GB = 4,096MB
- 8GB = 8,192MB
- 16GB = 16,384MB
- 32GB = 32,768MB

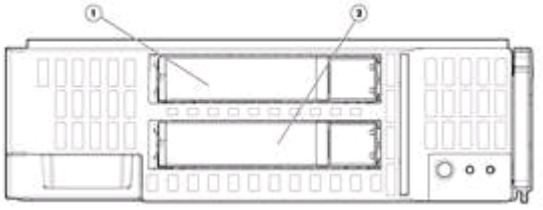
Memory options part number decoder



Memory

Following are memory options available from HP:

HP Memory	HP SmartMemory	
	Registered DIMMs (RDIMMs)	
	HP 16GB (1x16GB) Dual Rank x4 PC3-12800R (DDR3-1600) Registered CAS-11 Memory Kit	672631-B21
	HP 8GB (1x8GB) Single Rank x4 PC3-12800R (DDR3-1600) Registered CAS-11 Memory Kit	647899-B21
	HP 4GB (1x4GB) Single Rank x4 PC3-12800R (DDR3-1600) Registered CAS-11 Memory Kit	647895-B21
	HP 16GB (1x16GB) Dual Rank x4 PC3L-10600R (DDR3-1333) Registered CAS-9 Low Voltage Memory Kit	647901-B21
	HP 8GB (1x8GB) Dual Rank x4 PC3L-10600R (DDR3-1333) Registered CAS-9 Low Voltage Memory Kit	647897-B21
	HP 4GB (1x4GB) Single Rank x4 PC3L-10600R (DDR3-1333) Registered CAS-9 Low Voltage Memory Kit	647893-B21
	Unbuffered with ECC DIMMs (UDIMMs)	
	HP 8GB (1x8GB) Dual Rank x8 PC3L-10600E (DDR3-1333) Unbuffered CAS-9 Low Voltage Memory Kit	647909-B21
	HP 4GB (1x4GB) Dual Rank x8 PC3L-10600E (DDR3-1333) Unbuffered CAS-9 Low Voltage Memory Kit	647907-B21
	HP 2GB (1x2GB) Single Rank x8 PC3L-10600 (DDR3-1333) Unbuffered CAS-9 Low Power Memory Kit	647905-B21
	Load Reduced DIMMs (LRDIMMs)	
	HP 32GB (1x32GB) Quad Rank x4 PC3L-10600L (DDR3-1333) Load Reduced CAS-9 Low Voltage Memory Kit	647903-B21



1-2 2 x SFF hot-plug SAS, SATA, SAS SDD, and SATA SSD hard drives

Hard Drives

NOTE: The ProLiant BL460c Gen8 server includes the new HP hot-plug small form factor (SFF) SmartDrive carrier for enhanced management and reduced maintenance errors. HP drives from previous generation servers are not compatible with the BL460c Gen8 drive bays.

NOTE: Hard drives have either a one year or three year warranty; refer to the specific hard drive QuickSpecs for details.

NOTE: The hard drive options are not required when configuring a drive-less model.

SAS Hot Plug Smart Drive SFF (2.5-inch) Enterprise Drives

	Quantity Supported	Position Supported	Controller
900GB 6G SAS 10K 600GB 6G SAS 10K 450GB 6G SAS 10K 300GB 6G SAS 10K 300GB 6G SAS 15K 146GB 6G SAS 15K 72GB 6G SAS 15K	2	1-2	HP Smart Array P220i Controller

SAS Hot Plug Smart Drive SFF (2.5-inch) Midline Drives

	Quantity Supported	Position Supported	Controller
1TB 6G SAS 7.2K 500GB 6G SAS 7.2K	2	1-2	HP Smart Array P220i Controller

6G SATA Hot Plug with Smart Drive SFF (2.5-inch) Midline Drives

	Quantity Supported	Position Supported	Controller
1TB 6G SATA 7.2K 500GB 6G SATA 7.2K	2	1-2	HP Smart Array P220i Controller

6G SAS SLC Hot Plug SFF (2.5-inch) Enterprise Performance Solid State Drives

	Quantity Supported	Position Supported	Controller
400GB 6G SAS SLC 200GB 6G SAS SLC	2	1-2	HP Smart Array P220i Controller

6G SAS MLC Hot Plug SFF (2.5-inch) Enterprise Mainstream Solid State Drives

Storage

	Quantity Supported	Position Supported	Controller
800GB 6G SAS MLC 400GB 6G SAS MLC 200GB 6G SAS MLC	2	1-2	HP Smart Array P220i Controller

System Unit	**Dimensions** (H x W x D) (with bezel)	7.11 x 2.18 x 20.37 in (18.07 x 5.54 x 51.76 cm)	
	Weight (approximate)	Maximum: all processors, 16 DIMMs, hard drives, mezzanine cards, and two flash cache batteries installed)	14.00 lb (6.33 kg)
		Minimum: one processor and 2 DIMMs installed	10.50 lb (4.75 kg)
	Power Specifications	For power specifications including input requirements, BTU rating, and power supply output, please see the: • HP BladeSystem c3000 Enclosure QuickSpecs at http://h18000.www1.hp.com/products/quickspecs/12790_div/12790_div.html. • HP BladeSystem c7000 Enclosure QuickSpecs at http://h18000.www1.hp.com/products/quickspecs/12810_div/12810_div.html. To review typical system power ratings use the HP Power Advisor which is available via the online tool located at www.hp.com/go/hppoweradvisor.	
	System Inlet Temperature	Operating	10° to 35°C (50° to 95°F) at sea level with an altitude derating of 1.0°C per every 305 m (1.8°F per every 1,000 ft) above sea level to a maximum of 3,050 m (10,000 ft), no direct sustained sunlight. Maximum rate of change is 10°C/hr (18°F/hr). The upper limit may be limited by the type and number of options installed. System performance may be reduced if operating with a fan fault or above 30°C (86°F).
		Non-operating	-30° to 60°C (-22° to 140°F). Maximum rate of change is 20°C/hr (36°F/hr).
	Relative Humidity (non-condensing)	Operating	10 to 90% relative humidity (Rh), 28°C (82.4°F) maximum wet bulb temperature, non-condensing.
		Non-operating	5 to 95% relative humidity (Rh), 38.7°C (101.7°F) maximum wet bulb temperature, non-condensing.
	Altitude	Operating	3,050 m (10,000 ft). This value may be limited by the type and number of options installed. Maximum allowable altitude change rate is 457 m/min (1,500 ft/min).
		Non-operating	9,144 m (30,000 ft). Maximum allowable altitude change rate is 457 m/min (1,500 ft/min).
	Acoustic Noise	For acoustic noise specifications, please see the HP BladeSystem c-Class	

Enclosures QuickSpecs located at:
HP BladeSystem c3000 Enclosure QuickSpecs:
http://h18000.www1.hp.com/products/quickspecs/12790_div/12790_div.html
HP BladeSystem c7000 Enclosure QuickSpecs:
http://h18000.www1.hp.com/products/quickspecs/12810_div/12810_div.html

HP iLO 4 On System Management Processor	Architecture	PCI Express based health and remote management ASIC
	Processor	PCI Express RISC processor core running at 400MHz
	Upgradeability	Option firmware upgradeable via Flash ROM
	Video Support	1920 x 1200 (16 bpp) DVR max resolution
	Interfaces	One Ethernet Sideband connection (10/100/1000 Mb/s)
		One Ethernet network LAN connection (1 Gbps) for rack, towers and SL systems
		One Ethernet network LAN connection (10/100 Mb/s) for Blade Systems
	Memory	16 MB Flash 256 MB DDR 3 with ECC (112 MB after ECC and video)
	Operating System Support	NOTE: For the latest operating systems and browsers supported, please refer to http://www.hp.com/go/compareilo.
		Microsoft Windows 2008 R2
		Microsoft Windows 2008 (32 bit and 64 bit)
		Microsoft Windows Server 2008 Standard Edition (32 bit and 64 bit)
		Microsoft Windows Server 2008 Enterprise Edition (32 bit and 64 bit)
		Red Hat Enterprise Linux 5.7 (32 bit and 64 bit)
		Red Hat Enterprise Linux 6.0 (32 bit and 64 bit)
		SUSE LINUX Enterprise Server 11 (32 bit and 64 bit)
		SUSE LINUX Enterprise Server 10 (32 bit and 64 bit)
		VMware ESX 4.1
		VMware ESXi 5.0
	Client System Support	Red Hat Enterprise Desktop 5.00
		SUSE Linux Enterprise Desktop 11
		SUSE Linux Enterprise Desktop 10
		Windows 7
		Microsoft Windows XP Professional Edition
		Microsoft Windows Vista Business and Ultimate Editions
	Client Browser Support	Microsoft Internet Explorer 9 NOTE: For customers using Protected Mode, please use the Java based version of Integrated Remote Console.
		Microsoft Internet Explorer 8 NOTE: For customers using Protected Mode, please use the Java based version of Integrated Remote Console.
		Microsoft Internet Explorer 7

		Firefox Extended Support Release (ESR) 10 (on supported Windows and Linux systems
		Firefox 3.6 (on supported Windows and Linux systems)
	Command Line Support	Secure Shell and serial port access
		Secure Socket Layer
		Secure Shell version 2
	Security	Advanced Encryption Standard (AES) and Triple Data Encryption Standard (3DES) on browser, CLP and XML scripting interface
		AES encryption of video
		RC4 encryption of video
	Directory Support Services	Active Directory v1.0 (Windows 2003)
	Driver Support	HP ProLiant iLO 4 Management Controller Driver Package
	Management protocols supported	SNMP, IPMI 2.0 (system and LAN interface), DMTF Systems Management Architecture for Server Hardware Command Line Protocol (SMASH CLP), HP RIBCL XML
HP Smart Array P220i Controller	Disk Drive Interface	6Gb/s SAS (Serial Attached SCSI)
	Server Interface	x4 PCI Express host interface
	Cache Memory	512MB flash backed write cache (FBWC) cache standard
	Logical Drives Supported	64 (with included 512MB cache)
	Host Memory Addressing	64-bit, supporting servers memory space greater than 4GB
	RAID Support	RAID 1 (mirroring) and RAID 0 (striping)
	Other	Upgradeable firmware with recovery ROM Online drive flash (with SAS drives)
HP FlexFabric 10Gb 2-port 554FLB FlexibleLOM	Type	Integrated dual-port KR 10Gb FlexibleLOM with FlexFabric (Flex-10, FCoE, hardware-based iSCSI, iSCSI boot, TCP/IP offload engine, and autosencing 1Gb/10Gb Ethernet capability)
	Network Processor	Emulex BE3
	Data Transfer Method	x8 PCI Express 2.0
	Network Transfer Rate	Two ports, each at 20Gbps full duplex; 40Gbps aggregate full duplex theoretical bandwidth NOTE: Each port is autosensing 1Gb/10Gb, and can interoperate with 1Gb or 10Gb HP BladeSystem c-Class interconnect components. Both ports will operate at the same speed. NOTE: Each port on the 554FLB adapter transmits from the server at 20Gbps (theoretical) full duplex.
	IEEE Compliance	802.1p, 802.1q, 802.1qau, 802.3ad, 802.3ae, 802.3ap (10GBase-KX4) and 802.3x
	Standard Features	ProLiant Teaming including Network Fault Tolerance, Transmit Load Balancing, and Switch-Assisted Load Balancing 9K Jumbo frames (4K Jumbo frames when in FCoE mode) Microsoft Windows Receive Side Scaling (RSS) Hardware-based accelerated iSCSI iSCSI boot

		Flex-10 capability Fibre Channel over Ethernet (FCoE) TCP/IP offload engine (stateless TCP/IP) Autosencing 1Gb/10Gb Ethernet
Environment-friendly Products and Approach	End-of-life Management and Recycling	Hewlett-Packard offers end-of-life HP product return, trade-in, and recycling programs in many geographic areas. For trade-in information, please go to: http://www.hp.com/go/green. To recycle your product, please go to: http://www.hp.com/go/green or contact your nearest HP sales office. Products returned to HP will be recycled, recovered or disposed of in a responsible manner. The EU WEEE directive (2002/95/EC) requires manufacturers to provide treatment information for each product type for use by treatment facilities. This information (product disassembly instructions) is posted on the Hewlett Packard web site at: http://www.hp.com/go/green. These instructions may be used by recyclers and other WEEE treatment facilities as well as HP OEM customers who integrate and re-sell HP equipment.

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For hard drives, 1GB = 1 billion bytes. Actual formatted capacity is less.